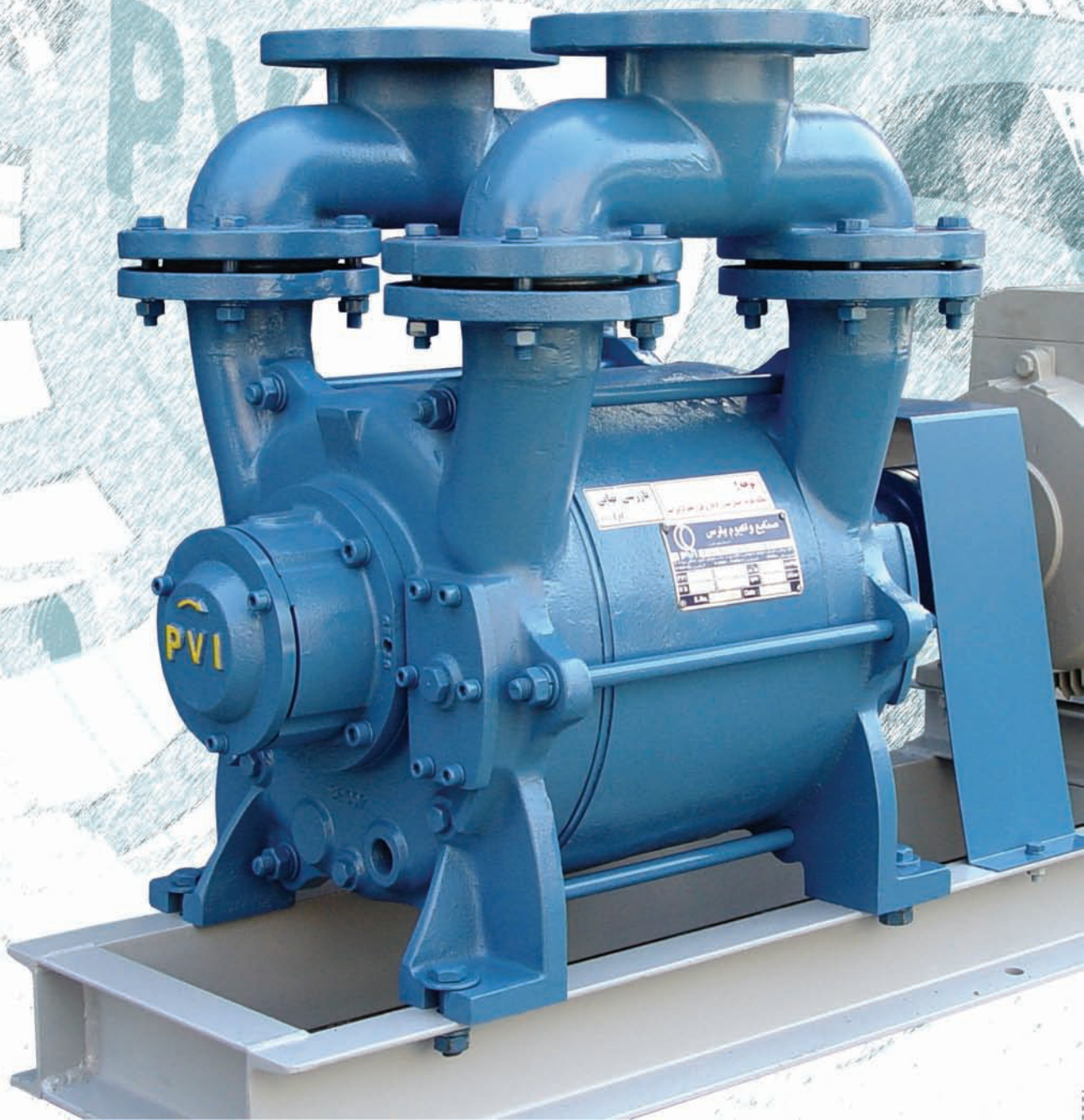
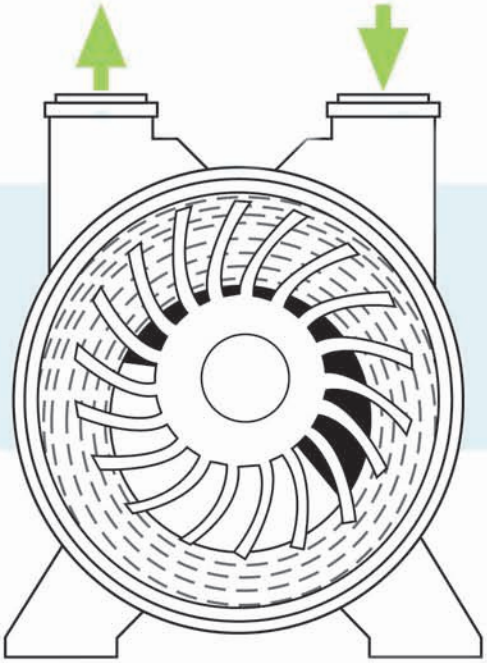
PARS VACUUM INDUSTRIES

PARS VACUUM INDUSTRIES

PUMPS BLOWERS COMPRESSORS



Design and Construction:



The PVI liquid ring pumps are constructed of two main parts: rotor (shaft and impeller) and casing (cylinder and cylinder head), which in spite of their simple mechanisms offer high quality of performance.
The material used in the pumps is of high quality and the parts are manufactured under the ISO and DIN standards with accepted tolerances of 100th of a millimeter. This accuracy leads to a minimum internal leakage and maximum pump efficiency. Pumps' rotors are dynamically balanced with computerized devices which lead to elimination of dynamic vibrations.
Each pump is fully tested for its capacity, pressure, vacuum operation, power consumption and other measures of performance. All parts are 100% quality controlled by our QC department.

Operating Mechanism:

The vaned impeller rotates around the pump axis of rotation in an eccentric fashion. The liquid (usually water) is fed into the pump cylinder and, by centrifugal acceleration, forms a moving cylindrical ring against the casing. The liquid ring creates seals between impeller vanes and the two sides of the cylinder. The eccentric rotation of the impeller causes cyclic variations of the volume enclosed by the impeller vanes and the ring. Air or gas/vapor is input to the pump via the inlet port. It is trapped in the compression chambers formed between the vanes and the liquid ring. Due to the reduction in the volume of these compression chambers which is a result of the eccentric rotation of the impeller, air or gas/vapor is compressed and discharged through the outlet port of the pump.
Cooling of the pump is done by the liquid (normally water). A fresh supply of liquid can be fed into the pump continuously or it can be cooled after discharge and fed back into the pump. The former method is more environment-friendly since there is no waste of liquid (closed-loop).

PVI-T102 ~ T202

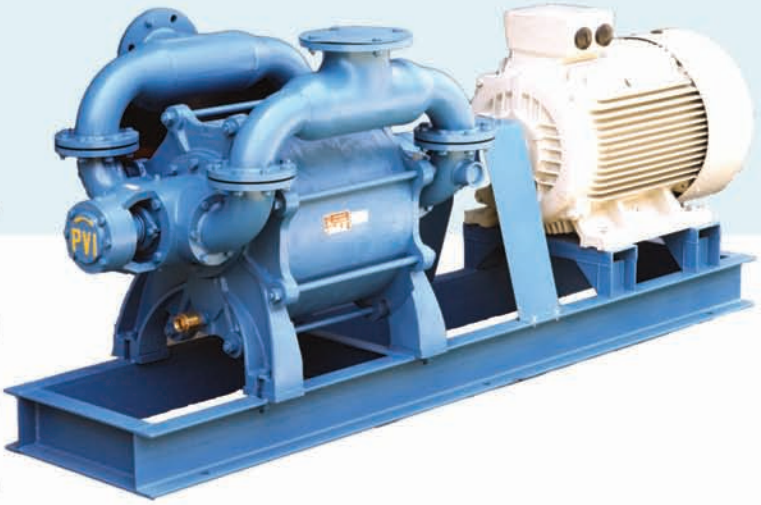
PVI-T382

PVI Vacuum Pump/Air Compressor Models:

A) Two stage type with side plate with a capacity from 40 to 780 m^3/h and an absolute vacuum pressure of 30 mmHg.
B) One stage type with rotor chambers with a capacity from 1000 to 5000 m^3/h and an absolute vacuum pressure of 80 mmHg.

Advantages of PVI Vacuum Pumps:

- Reduced water consumption
- Reduced power consumption
- Operating with no vibration and reduced noise level
- Capability of simultaneous transfer of gas and liquid
- Low service and maintenance costs
- 1 year of warranty and 15 years of after sales services
- Oil-free operation
- Easy installation without the need to use additional equipment even in large models
- Based on the latest technology of manufacturing liquid ring pumps
- Increasing the speed of reaching the maximum suction pressure
- Increased suction pressure (up to 99 % for oil packages)
- Ability to reach an absolute vacuum pressure of 0.01 mbar (in combination with rotary pumps)
- Designed for heavy-duty and non-stop operation
- Using mechanical seals for two stage models (for one stage type, they can be installed upon customer request)
- Contact and friction less operation of internal parts, hence an increase in mechanical efficiency and lifetime of the machine



PVI-1500

Technical Specifications:

Designation

PVI-T102/M

(Without alphabet)	Vacuum pump (single stage) 1000~5000	Size pump
T	Two time or two stage 42~1000	Size pump
AT, A	Corrosion resistance	Size pump
K	Air blower	Size pump
AK	Gas compressor	Size pump
PT, P	Water package unit	Size pump
OT	Oil package unit	Size pump

- With electric motor
- Size pump

Technical data: two stage model with side plates

		PVI-T42	PVI-T102	PVI-T202	PVI-T282	PVI-T382	PVI-T502	PVI-T782
Max suction capacity	m^3/h	40	100	210	280	380	525	780
Pump rotation speed 50Hz	rpm	2850	1450	1450	1450	1450	1450	1450
Motor power Vacuum pump Air blower/Gas compressor	kw	1.5 2.2	3 4	5.5 7.5	7.5 11	11 15	15 18.5-22	22 30
Min suction pressure	mmHg	30						
Max temperature of gas	˚C	70						
Max temperature of service liquid	˚C	50						
Max viscosity of service liquid	mm^2/s	8					20	
Contents of liquid in the pump up to shaft level (L)		0.25	1.1	2.5	3.2	4.2	6.5	8.5
Noise level at 80 mmHg	dB(A) ±3	74					75	77
Inlet & outlet	inch	1	$1^1/_2$	$2^1/_2$	$2^1/_2$	$2^1/_2$	2 x $2^1/_2$(4")	2 x $2^1/_2$(4")
Drain connection	inch	$^3/_8$	$^1/_2$	$^1/_2$	$^1/_2$	$^1/_2$	$^1/_2$	$^1/_2$
Service liquid connection	inch	$^3/_8$	$^1/_2$	$^3/_4$	$^3/_4$	$^3/_4$	$^3/_4$	$^3/_4$

Technical data: one stage model with rotor chambers

		PVI-1000	PVI-T1000	PVI-1500	PVI-3000	PVI-5000
Max suction capacity	m^3/h	1000	1000	1500	3000	5000
Pump rotation speed 50Hz	rpm	980	980	980	750	750
Motor power Vacuum pump Air blower/Gas compressor	kw	37 45	45 -	45 55	110 160	160 250
Min suction pressure	mmHg	80	30	80	80	80
Max temperature of gas	˚C	70				
Max temperature of service liquid	˚C	50				
Max viscosity of service liquid	mm^2/s	20				
Contents of liquid in the pump up to shaft level (L)		15	25	24	120	200
Noise level at 80 mmHg	dB(A) ± 3	79	78	79	80	80
Inlet & outlet	inch	5	4	6	8	10
Drain connection	inch	1	1	1	$1^1/_2$	$1^1/_2$
Service liquid connection	inch	$1^1/_2$	$1^1/_2$	$1^1/_2$	2"	2"

Some Applications of PVI Vacuum Pumps:

- Producing vacuum pressure for condensation, evaporation and filtration systems in sugar industry
- Central suction systems for printing machines
- Central suction systems in hospitals
- Filtration, floatation, concentration and molding under vacuum in mining metal and mining industry
- Deaeration of pumps with low NPSH in water and wastewater treatment
- Distillation of products, filtration, producing vacuum pressure and deaeration in different processes and used as steam ejectors in oil, gas and petrochemical industry
- Used as steam vacuum condenser for steam turbines and deaeration of water in power plants
- Dewatering the asbestos dough

Parts' Material: two stage model with side plates

Component	Execution 1 PVI-T,K (42 ~ 782)	Execution 2 PVI-AT (42 ~ 782)
Body	GG 25	AISI 304 - 316
Impeller	GS 400 - 15 or Bronz	AISI 304 - 316
Shaft	(T 282 ~ T 382) C45 (T 502 ~ T 782) AISI 420	(AT 282 ~ AT 782) AISI 316
Plate	AISI 304	AISI 304 - 316
Valve	PTFE	PTFE
Valve cover	AISI 304	AISI 304 - 316
Seal	Mechanical seal	Mechanical seal
Internal surface	GG 25	AISI 304 - 316 - 321

Parts' Material: one stage model with rotor chambers

Component	Execution 3 PVI- (1000 ~ 5000) PVI-K (1000 ~ 5000)	Execution 4 PVI-A (1000 ~ 5000) PVI-AK (1000 ~ 5000)
Body	(600 ~ 1500) GG25 (3000 ~ 5000) ST 37+ S.S AISI 304	———
Impeller	AISI 304L	AISI 304 - 316
Shaft	(T1000) AISI 420 (1000 ~ 5000) DIN 7225	[A, AK (1000 ~ 1500)] AISI 316 [A, AK (3000 ~ 5000)] DIN 7225
Shaft sleeve	———	AISI 316
Rotor chamber	Bronz	AISI 316 - 321
Seal	Soft packing seal	Soft packing seal
Internal surface	GG 25	AISI 304 - 316 - 321

PVI-AK3000

Some Applications of PVI Air Compressors/Blowers:

- Compressing moist natural gases, pumping process gases, re-carbonation and PH control in oil, gas and petrochemical industry
- Used as FURFURAL oil-producing units in oil, gas and petrochemical industry
- Conveyance of CO2 gas and separating the solid layer from vacuum filters in sugar industry
- Aeration in water and wastewater treatment, used in fish and shrimp ponds and in producing vinegar, alcohol etc.

Explanations:

1) Capacity at suction inlet has been measured in conventional conditions as per F.A.D (FREE AIR DELIVERY).

2) The temperature of the entering air: -20 degrees C. Environment pressure: 760 mmHg (1013 mbar). Temperature of service water: 15 degrees C (tested in equal conditions).

3) Main parameters that affect the capacity of the pump: inlet air/gas density, service liquid specifications (pressure, density and viscosity), service liquid temperature, pump outlet pressure, gas and vapor suction pressure and rotational speed of the pump.

4) It is possible to use v-belt system for power transmission (upon customer request) in order to change the flow capacity (for PVI-T502 and above).

5) The additional accessories that can be ordered for the liquid ring pumps are as follows: Separating vessel for air and water, anti-cavitations valve (VGB), unloading valve (VAD), check valve (VAC), solenoid valve.

Water/Oil Vacuum Pump Package Units:

PVI package units include the liquid ring pump, separation vessel for separating the liquid (oil or water) from air / gas, cooling system, liquid reservoir, control panel with appropriate electrical safety measures, related valves, circulating pump etc.
Oil or water package units are used in different industries such as chemical, petrochemical, pharmaceutical, brick industry, china and ceramic, central suction for hospitals, printing industry etc.

Main advantages of these units are as follows:

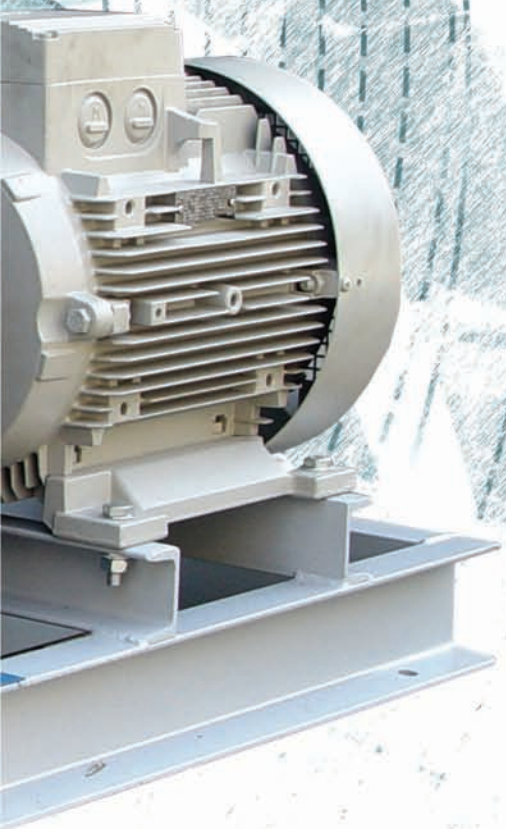
- Cooling the liquid in service
- Controlling the pump operating temperature
- Reaching the maximum vacuum pressure up to 10 mmHg
- Preventing the creation of residue and sediments inside the pump
- Separating the service liquid from compressed gases in the outlet port
- Easy installation, simple commissioning and low service and maintenance costs
- Preventing the service liquid to be wasted because of circulation of the liquid

Explanation:

PVI liquid ring pump packages can be equipped with multiple stages of pumps, custom-made vessels, gas ejectors (reaching vacuum pressure of 6 mmHg), rotary pumps (reaching 0.01 mbar), vacuum vessels etc. upon customer request as special design.

PVI-OT382

ISO 9001:2008



Address: No.26, 21 Fath Street, Fath highway, Tehran, Iran
Tel: +98 21 66801373 (10 Lines) Fax: +98 21 66806659
info@parsvacuum.com www.parsvacuum.com